

Work Order ID 131182

131182

Page 1

Monday, March 30, 2015 9:10:34 AM

Item ID: D350-748-203

Accept

N900040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: SS Aft Crosstube AS350 / AS355

Start Date: 3/30/2015 Start Qty: 1.00

1

Cust Item ID:

Required Date: 3/30/2015 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: MLS Date: 15-03-30 Tooling: _____ Date: _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr

Revision Nbr

D350-748-243

A

DAS
6

100

Document Control

0.00

9-89

100

DOCUMENT CONTROL

DC

Memo

0.00

Doc.Control -USB or Paperwork

Photocopy bluefile & type labels per PPPD350-748-201

CHG001

DAS
02
9-89

SEP 22 2015

110

0.00

110

BENDING MACHINE - CROSSTUBES

CNC Bend 2

Memo

0.00

CNC Alpha 160 Bender

Bend tube as per Dwg D350-748-243 using CNC bender program D350A and Folio FT

*****UNDER BEND .225" PER SIDE*****

****USE (4) DT9824 SHIM BLOC TO CHECK STRAIGHTNESS****

JW 15-08-10

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS <table style="width: 100%;"> <tr> <td>Skid-tube ☐</td> <td>Crosstube ☐</td> <td>Water Jet ☐</td> <td>Engineering ☐</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>	Skid-tube ☐	Crosstube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
Skid-tube ☐	Crosstube ☐	Water Jet ☐	Engineering ☐															
Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐															
Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐															
Large Fab ☐	Composite ☐	Supplier ☐																

Root Cause	Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Design									
Doc/Data									
Equip/Tooling									
Handling/Pre									
Material									
Operator									
Offset/Setup									
Process									
Supplier									
Training									
Transport									
Unapproved									

FAULT CATEGORY

Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence	☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge ☐ Pressure/Forced ☐ Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other
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Work Order ID 131182

131182

Page 2

Monday, March 30, 2015 9:10:34 AM

Item ID: D350-748-203 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: SS Aft Crosstube AS350 / AS355
 Start Date: 3/30/2015 Start Qty: 1.00 ***1*** Cust Item ID:
 Required Date: 3/30/2015 Req'd Qty: 1.00 ***1*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120 *120* Crosstubes Crosstubes	Memo ****VERIFY CROSSTUBE DIMENSIONS AS PER DWG****	0.00 0.00							
127 *127* QC Quality Control	QC15- Crosstube Dimensional Check Memo ***MARK CUT LINES***	0.00 0.00				1			DAS 38 9-89 AUG 10 2015
128 *128* Crosstubes Crosstubes	Memo CUT TUBE AT HEIGHT ON FAI SHEET VERF HEIGHT <u>31.35</u> BY QC 15 LEVEL INSPECTOR <u>RB</u> VERF TWIST <u>1022</u> BY QC15 LEVEL INSPECTOR <u>RB</u>	0.00 0.00				PL		15/08/11	

Work Order ID 131182

Monday, March 30, 2015 9:10:34 AM

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Page 3

Item ID: D350-748-203 Accept ***N900040100*** Setup Start ***NS1***
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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
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Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	Crosstubes	0.00							
130									
Crosstubes	Memo	0.00							
Crosstubes									
	2- Drill Tube as per Dwg D350-748-243 Using DT8876 Drill Jigs, Set-up drill table as per QSI 010								
	3 -Deburr								
	4- Engrave Part # and Batch # as per Dwg D350-748-243								
	5-Remove all marks from tube within limits of D350-748-243								
140	QC6- Inspect dimensions to drawing	0.00							
140									
QC	Memo	0.00							
Quality Control									

DAS
49
9-89

15/08/21

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Crosstube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐
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Root Cause	Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Design									
Doc/Data									
Equip/Tooling									
Handling/Pre									
Material									
Operator									
Offset/Setup									
Process									
Supplier									
Training									
Transport									
Unapproved									

FAULT CATEGORY

Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence	☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge ☐ Pressure/Forced ☐ Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other
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Work Order ID 131182***131182***

Page 4

Monday, March 30, 2015 9:10:34 AM

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Stop ***NS2***

Item Name: SS Aft Crosstube AS350 / AS355

Start Date: 3/30/2015 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 3/30/2015 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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174

Outsource process - NDT per QSI038 4.1

0.00

174

Outsource2

Memo

0.00

Outsource process - NDT

ISSUE P/O TO ACCUREN: 29 562CZ AUG 24 2015

DAS

06
9-89

176

Receive & Inspect for Damage & Mat'l Certs

0.00

176

Packaging

Memo

0.00

Packaging

AUG 26 2015

DAS

38
9-89

178

QC5- Inspect part completeness to step on W/O

0.00

178

QC

Memo

0.00

Quality Control

AUG 27 2015

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Crosstube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐
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Root Cause	Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Design									
Doc/Data									
Equip/Tooling									
Handling/Pre									
Material									
Operator									
Offset/Setup									
Process									
Supplier									
Training									
Transport									
Unapproved									

FAULT CATEGORY

Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge ☐ Pressure/Forced ☐ Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other
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Work Order ID 131182

Monday, March 30, 2015 9:10:34 AM

131182

Page 5

Item ID: D350-748-203

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: SS Aft Crosstube AS350 / AS355

Start Date: 3/30/2015 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 3/30/2015 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
180	SprayPaint	0.00				1			DAS 41 9-89 15-8-25
180									
SprayPaint	 Memo	0.00	POSITIVE RECALL EFFECTIVE <u>15/03/30</u> AUTH <u>le</u> RELEASED <u>dp</u> DATE <u>15/6/27</u> <u>visit for print scheme</u>						
Spray Painting	1-Prime inside and out crosstube as per QSI 005 4.2 BATCH: <u>132384</u>								
	2-Paint Outside of Tube as per Dart QSI 005 4.2 BATCH: <u>132664</u>								
190	QC14- Inspect Spray Paint	0.00				1			DAS 38 9-89 SEP 09 2015
190									
QC	Memo	0.00							
Quality Control	Then, Wrap in plastic bag to protect from scratches								

Monday, March 30, 2015 9:10:34 AM

Item ID: D350-748-203

Accept

N900040100

Setup Start *NS1*

Revision ID:

Item Name: SS Aft Crosstube AS350 / AS355

Stop *NS2*

Start Date: 3/30/2015 **Start Qty:** 1.00

*** 1 ***

Cust Item ID:

Required Date: 3/30/2015 **Req'd Qty:** 1.00

*** 1 ***

Customer:

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

200

0.00

200

Crosstubes

Crosstubes

Memo

0.00

Crosstubes

INSTALL GROUND WIRE INSERT, THEN INSERT SCREW AND WASHER

1-Abrade mating surfaces of support and crosstube with 180 grit sandpaper, clean the area with MEK or equivalent as per dwg

2-Install supports with Proseal 890 per D350-748-243 and QSI 015

A/R Proseal 890 Batch: 132655
EXP: 3/16

3-Install supports clamps Using Dt8876 as per Dwg D350-748-243,Torque to 60-80 IN-LBS.

PROSEAL CURE TIME 72 HOURS:

Start: 15-9-1
Finish: 15-9-4

210

QC5- Inspect part completeness to step on W/O	0.00
---	------

210

QC

Memo

0.00

Quality Control

***RE-CHECK TORCQUE ON CLAMP AFTER PROSEAL HAS CURED
FOR 72HOURS AS PER DWG.***

DAS
38

~~9-89~~

SEP 09 2015

Work Order ID 131182

Monday, March 30, 2015 9:10:34 AM

131182

Page 7

Item ID: D350-748-203

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: SS Aft Crosstube AS350 / AS355

Start Date: 3/30/2015 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 3/30/2015 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

220

Pick Kit

0.00

220

Packaging

Memo

0.00

Packaging

DAS
27
9-89

SEP 15 2015



230

QC4- 100% Inspect kits for completeness

0.00

230

QC

Memo

0.00

Quality Control

DAS
02
9-89

SEP 22 2015

240

Packaging

0.00

240

Packaging

Memo

0.00

Packaging

Identify and pack for shipping as per PPPD350-748-203

Location: _____

PPP Rev: _____

8435

DAS
02
9-89

SEP 22 2015

Work Order ID 131182

Monday, March 30, 2015 9:10:34 AM

131182

Page 8

Item ID: D350-748-203

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: SS Aft Crosstube AS350 / AS355

Start Date: 3/30/2015 Start Qty: 1.00

1

Cust Item ID:

Required Date: 3/30/2015 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursTool ID Tool # Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

250

QC21 - Final Inspection - Work Order Release

0.00

250

QC

Memo

0.00

Quality Control

ML5

SEP 23 2015

Picklist Print

Monday, March 30, 2015 9:10:38 AM

Page 1

Work Order ID: 131182

131182

Parent Item: D350-748-203

D350-748-203

Parent Item Name: SS Aft Crosstube AS350 / AS355

Start Date: 3/30/2015

Required Date: 3/30/2015

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP REV:A 15.03.23 NEW ISSUE DD VERF;JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
MS51958-63		Purchased	No				Each	50.0000		1			
MS51958-63									**		DAS 41 9-89	15-8-31	
Screw													

			<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>								
			ST273	50									
			m131886	50						1			
AN4-41A		Purchased	No			220	Each	229.0000	8	8			

AN4-41A

Bolt

DAS
02
9-89

DAS
27
9-89

DAS
6
9-89

			<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>								
			ST312A	209									
			124836	9									
			m130716	192						8			
			m130726	8									
			ST340	5									
			m124804	5									
			ST341	15									
			124805	15									

SEP 15 2015

Picklist Print

Monday, March 30, 2015 9:10:38 AM

Page 3

Work Order ID: 131182

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Parent Item: D350-748-203

D350-748-203

Parent Item Name: SS Aft Crosstube AS350 / AS355

Start Date: 3/30/2015

Required Date: 3/30/2015

Start Qty: 1.00

Required Qty: 1.00

D3501-1

Manufactured No

220

Each

8.0000

16

16

D3501-1

Bushing

DAS
02
9-89

135919

DAS
6
9-89

Location

Loc Qty

Loc Code

ST046

8

125925

1

130742

7

MS21042L4

Purchased No

220

Each

2,634.000

24

24

MS21042L4

Locknut

DAS
02
9-89

DAS
27
9-89

SEP 15 2015

Location

Loc Qty

Loc Code

FP001

42

m124231

42

GA

634

m127813

634

ST260a

1056

m130799

56

m131803

1000

ST305

902

426

426

m128300

8

m128798

10

m130922

97

m131340

349

m131618

12

m132380

24

Picklist Print

Monday, March 30, 2015 9:10:38 AM

Page 4

Work Order ID: 131182

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Parent Item: D350-748-203

D350-748-203

Parent Item Name: SS Aft Crosstube AS350 / AS355

Start Date: 3/30/2015

Required Date: 3/30/2015

Start Qty: 1.00

Required Qty: 1.00

MS21042L5

Purchased

No

220

Each

465.0000

4

4

MS21042L5

Nut

DAS
02
9-89

DAS
02
9-89

Location

Loc Qty

Loc Code

GA

150

m127813

150

ST305

315

m127813

290

m130388

4

m131340

21

m132677

4

NAS1149D0463J

Purchased

No

220

Each

2,231.000

32

32

NAS1149D0463J

WASHER

DAS
02
9-89

DAS
02
9-89

Location

Loc Qty

Loc Code

CA

397

M129682

397

GA

136

M129390

136

ST269

1698

M130799

507

M131624

1191

m130035

30

SEP 15 2015

Picklist Print

Monday, March 30, 2015 9:10:38 AM

Page 5

Work Order ID: 131182

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Start Date: 3/30/2015

Required Date: 3/30/2015

Start Qty: 1.00

Required Qty: 1.00

NAS1149D0563J

Purchased

No

220

Each

799.0000

8

8

NAS1149D0563J

Washer

DAS
02
9-89

Location

Loc Qty

Loc Code

GA

130

m125807

130

ST260a

68

113524

3

118206

2

m130799

63

ST269

156

m128257

156

ST271

445

m131026

445

Each

0.0000

D350-748-243TRN

Manufactured

No

D350-748-243TRN

Crosstube Installation, High Aft

D3502-1

Manufactured

No

D3502-1

Support

Location

Loc Qty

Loc Code

LG050

28

119578

2

125926

-2

129420

28

Each

0.0000

D5123-7

Manufactured

No

D5123-7

Clamp Cushion

131194

**

**

**

**

DAS
27
9-89
SEP 15 2015

BL 15/08/07

DAS
41
9-89 15-9-2

DAS
41
9-89 15-9-2

Picklist Print

Monday, March 30, 2015 9:10:38 AM

Page 6

Work Order ID: 131182

131182

Parent Item: D350-748-203

D350-748-203

Parent Item Name: SS Aft Crosstube AS350 / AS355

Start Date: 3/30/2015

Required Date: 3/30/2015

Start Qty: 1.00

Required Qty: 1.00

AETC-1032 Purchased No

Each 20.0000

1

DAS

AETC-1032

41

15-8-31

Insert

9-89

Location

Loc Qty

Loc Code

st549

20

m131156

20

2 -> 1 scrap

NAS1149C0363R

Purchased

No

Each

682.0000

1

DAS

NAS1149C0363R

41

15-8-31

Washer

9-89

Location

Loc Qty

Loc Code

FP001

120

114742

120

GA

180

m130673

180

ST271

382

m130673

382

MS21920-20

Purchased

No

Each

157.0000

2

DAS

MS21920-20

41

15-9-2

Clamp

9-89

Location

Loc Qty

Loc Code

FG

2

122254

2

LG050

155

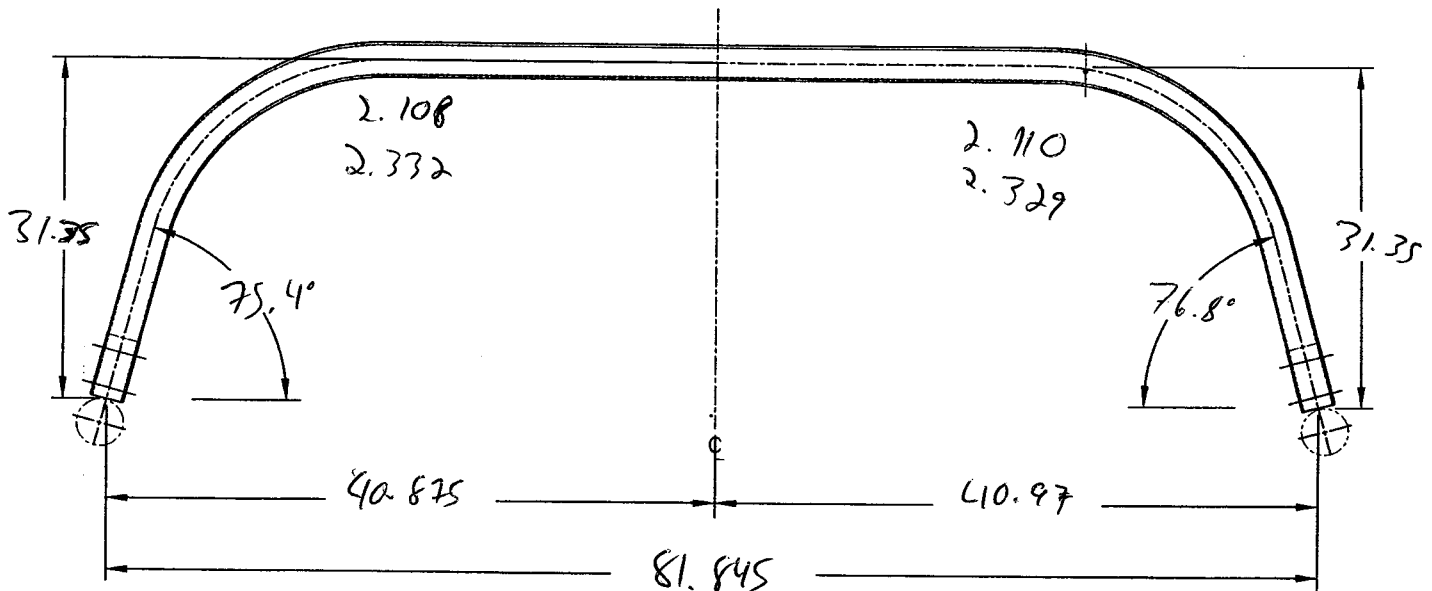
m128650

155

2

DART AEROSPACE LTD		Work Order: 13 1182
Description:		Part Number:
Inspection Dwg:	Rev:	Page 1 of 1

Required Dimension	Min	Max
Height	31.100	31.600
1/2 Span	40.77	41.03
Angle	75°	77°
Total Span	81.540	82.060
Bending Passes	7	
Crushing		8%



	Side A	Side B
Bending Passes	30	32
Crushing	3%	4.7%
Comments		

QC15 Inspection	DAS 38 Aug 10 2015
Date	

Rev	Date	Change	Revised by	Approved
A		New Issue		
B	06.09.19	Reformat; QC level revised	KJ/JM	
C	07.02.06	Reformat	KJ/JM	
D	12.02.15	Added bending passes and crushing	KJ	
E	12.03.07	Revised comments table	KJ	

Item	Qty -243	Part Number	Description
1	X	D350-748-243	CROSSTUBE ASSEMBLY (AS 350/355 HI AFT)
2	1	D6021-125	CROSSTUBE
3	2	D3502-1	SUPPORT
4	2	D5123-7	CLAMP CUSHION
5	1	AETC-1032	INSERT
6	2	MS21920-20 OR MS21920-21/-22	CLAMP (PER DART SPEC. M-MS21920-20/-21/-22)
7	1	NAS1149C0363R	WASHER (OR AN960C10)
8	1	NAS1635-3-8	SCREW (OR MS51958-63)
9	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6021-125
FINISHED LENGTH AFTER TURNING = 124.70±0.06 (AFTER BENDING/TRIMMING = 122.70 REF)
- 2) FINISH: PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCE: PER DART QSI 018 UNLESS OTHERWISE NOTED.
WALL THICKNESS ECCENTRICITY PER DART QSI 038 7.2
MIN. ALLOWABLE WALL IS -0.020 FROM NOMINAL
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: DART PART NUMBER "D350-748-243" AND BATCH NUMBER ON INSIDE OF CUFF
PER DART QSI 044 6.4 (VIBRATING STYLUS)
- 7) WEIGHT: 29.85 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE, EXCEPT FOR Ø0.290 HOLE.
- 9) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE. WHEN DRILLING HOLES EXTREME CARE MUST BE TAKEN AND CAREFUL DEBURRING PERFORMED TO ENSURE A CLEAN HOLE WITH NO CRACKING/CHIPPING/GROOVES.

TURNING

- 10) BLEND OUT ALL EDGES FROM MACHINING LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH. NOTE: ALL HOLES ARE DRILLED AFTER BENDING.

BENDING

- 11) BEND PROGRESSIVELY WITH A MINIMUM OF 7 PASSES PER SIDE. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D. ON TOP HALF OF BEND, AND 8% ON BOTTOM HALF OF BEND.
- 12) MAX AMPLITUDE OF RIBBLING ALONG BENT PORTION OF THE TUBE IS 0.030 (ZN A1-3)
- 13) MAX TWIST: WITH XTUBE LAYED FLAT ON SURFACE, THE DIFFERENCE BETWEEN CUFF HEIGHTS FROM THE SURFACE MAY BE NO LARGER THAN 0.38 (ZN C1-3).

ASSEMBLY

- 14) TO INSTALL D3502-1 SUPPORT: ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.02" TO 0.05" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 60 TO 80 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

SHO...
R...

131182 MWT
1503-30

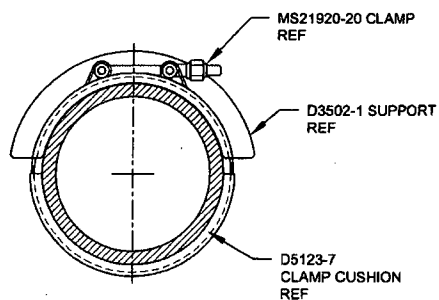
RELEASED

2015 MAR 18
47 ECN 15-547

A	NEW ISSUE	CP	15.01.21
REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED			
MFG. APPR.			
DE APPR.			
DATE	15.01.21		

DART AEROSPACE LTD	
HAWKESBURY, ONTARIO, CANADA	
DRAWING NO. D350-748-243	REV. A SHEET 1 OF 4
TITLE CROSSTUBE (AS 350/355 HI AFT)	SCALE NTS
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**D350-748-243
ASSEMBLY DETAIL**



SECTION A-A D4-2
SCALE 6X

INSTALL THIS SIDE ONLY, AFTER FINISH:
AETC-1032 INSERT
NAS1149C0363R WASHER
NAS1635-3-8 SCREW

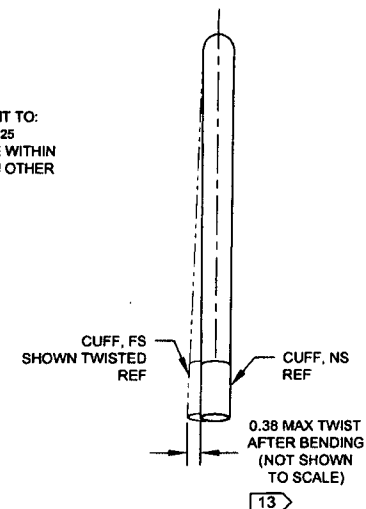
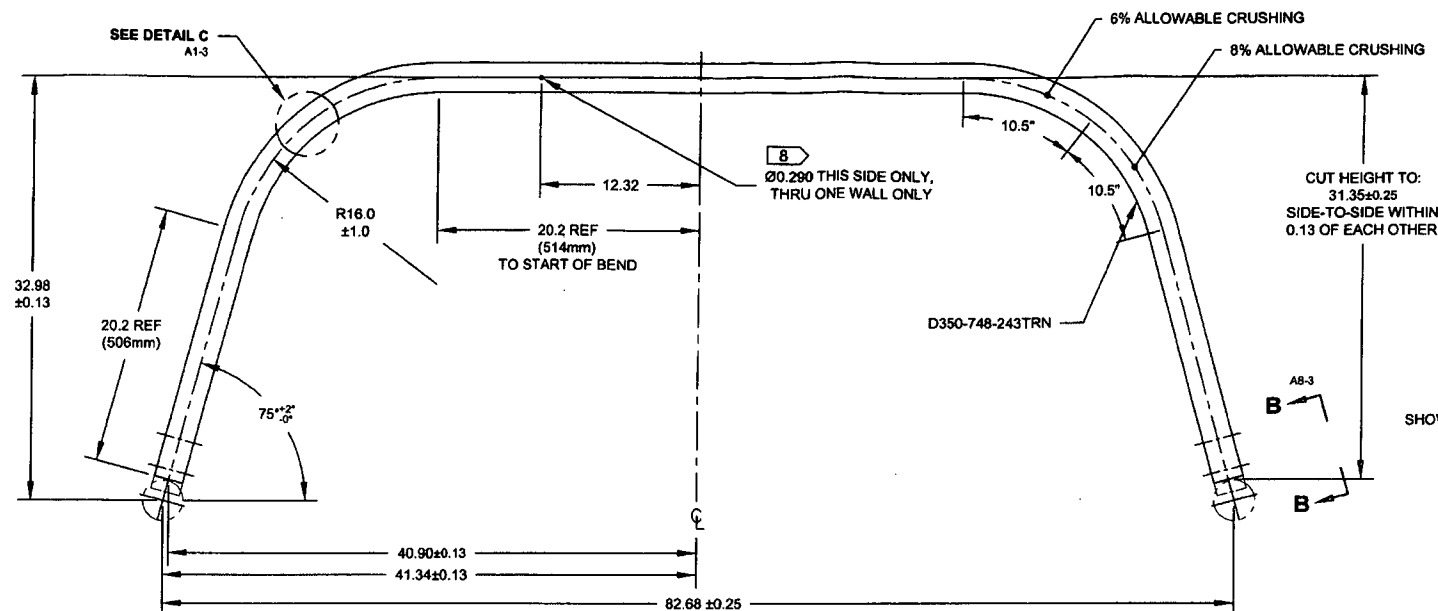
14 15
D3502-1 SUPPORT
MS21920-20 CLAMP (OR -21/-22)
D5123-7 RUBBER CUSHION
2 PL

D350-748-243
BENT TUBE

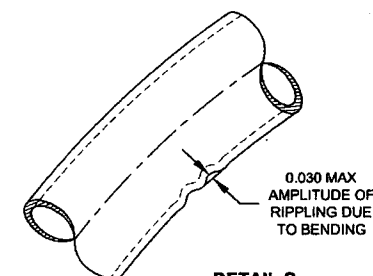
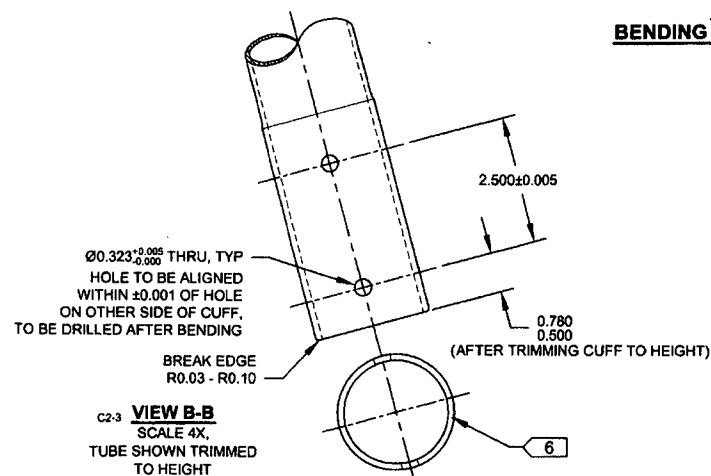
RELEASED

2015 MAR 18

DESIGN	92	DART AEROSPACE LTD	
DRAWN	92	HAWKESBURY, ONTARIO, CANADA	
CHECKED	A.P.	DRAWING NO.	REV. A
MFG. APPR.	J. J.	D350-748-243	SHEET 2 OF 4
APPROVED	J. J.	TITLE	SCALE
DE APPR.	J. J.	CROSSTUBE (AS 350/355 HI AFT)	NTS
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**D350-748-243
BENDING AND DRILLING DETAIL 11**



**DETAIL C D7-3
SCALE 4X
RIPPLING EXAGGERATED**

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2015 MAR 18

DESIGN	90	DART AEROSPACE LTD	
DRAWN	90	HAWKESBURY, ONTARIO, CANADA	
CHECKED	A.P.	DRAWING NO.	REV. A
MFG. APPR.		D350-748-243	SHEET 3 OF 4
APPROVED		TITLE	SCALE
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D350-748-243TRN
TURNING DETAIL

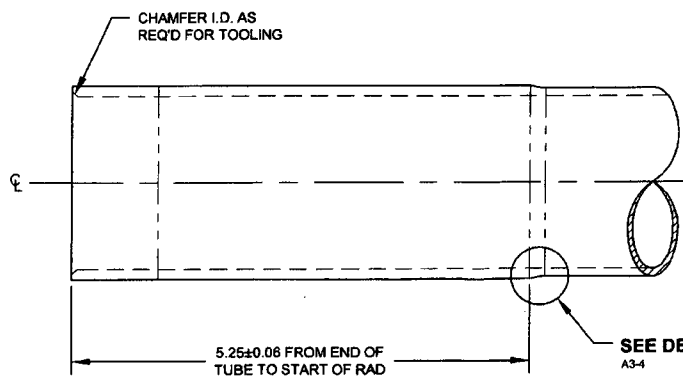
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RELEASE

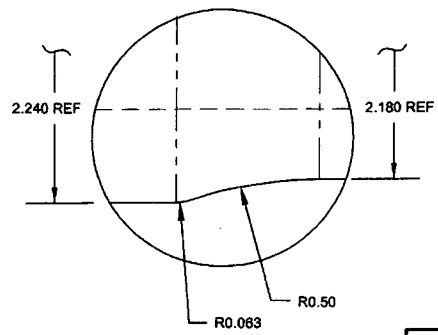
2015 MAR 18

SEE DETAIL D
A8-4

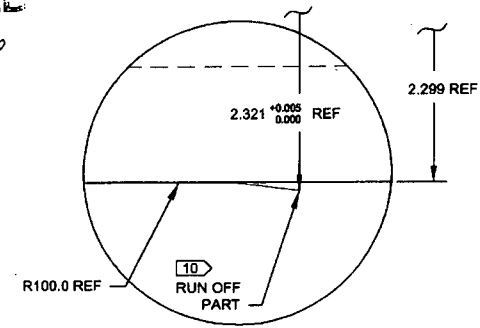
SEE DETAIL E
A1-4



DETAIL D:
CROSSTUBE CUFF C7-4
SCALE 3X



DETAIL F:
CUFF TRANSITION A5-4
NOT TO SCALE



DETAIL E:
TAPER RUN-OFF C2-4
NOT TO SCALE

DESIGN		DART AEROSPACE LTD	
DRAWN		HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. A
MFG. APPR.		D350-748-243	SHEET 4 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE (AS 350/355 HI AFT)	NTS
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skyservice Work Order Traveler

Sky Service F.B.O. Inc.

DOT APP 53-89 / EASA 145.7142 / BDA AMO 385

WO #: MWO25564	Customer: Dart Aerospace Ltd.	Dept: NDT YUL	Reference: 29562
Descr:	PN:	S/N:	Qty: 1
Make:	Model:	Reg:	A/C S/N:
TSN:	CSN:	TSO:	
Task: UNSCHEDULED			Sequence: 1

Work Required:

CARRY OUT NDT ON 9 CROSSTUBES AS PE PO29562

3 SSFWD CROSSTUBES , ITEM ID# D350-748-103 , WORK ORDER ID# 131170, 131171, 131173

6 SS AFT CROSSTUBES , ITEM ID# D350-748-203 , WORK ORDER ID# 131182, 131183, 131184, 131185, 131186, 131187

Action Taken:						Date:	Initial/Stamp:
LPI C/O IAW ASTM E-1417M-13 ***NO CRACK FOUND*** PEN. ZL-56, MPO13600, UV M-20141, CLEANER SKC-S MPO13923 , DEV. MPO11715						AUG 24 2015	 
Description	Location	P/N	Qty	Batch	S/N Off	S/N On	

I certified that the maintenance described above has been performed in accordance with the applicable standard of airworthiness.

Signature:	ACA/SCA Stamp	Date:
Name: RAFFA DELIRIAN		AUG 24 2015

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____

Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☒ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☒ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐				
Date : _____		Step #: _____		QTY Effective : _____		MRB (QSI042) Approval <i>DAS</i> 72 9-89 <i>15/8/25</i>		
Description Work Order Deviation				Disposition				
To increase adhesion of prime/paint, use the following: Axcite 1320SS Cleaner Axcite Z30S Metaklok. Tests show that Axcite provides superior adhesion vs normal procedure per QSI 005				Axcite 1320S Cleaner: 132520 B/N Axcite Z30S Metaklok: 132474 B/N				Completed By DAS 41 9-89
				Lead hand / Supervisor Approval Verification				
				QC / QA Coordinator Approval				
Root Cause				FAULT CATEGORY				
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabelled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
				OTHER : _____				

4.0 WEIGHT AND BALANCE

The following weight and balance information is for Dart crosstube installations only. This data should be similar to the existing installation. Differences from the parts removed are the responsibility of the installer.

DART CROSSTUBE	FWD/ AFT	WEIGHT	STA	MOMENT
D350-748-101 D350-748-103	Fwd	35.2 lb (16.0 kg)	106.3 in (2.70 m)	3742 lb-in (43.2 kg-m)
D350-748-201 D350-748-203	Aft	34.7 lb (15.7 kg)	162.4 in (4.12 m)	5635 lb-in (64.7 kg-m)

5.0 PARTS LIST

Qty -101	Qty -103	Qty -201	Qty -203	Part Number	Description
X				D350-748-101	CROSSTUBE INSTALLATION, AS 350/355 HIGH FWD
	X			D350-748-103	CROSSTUBE INSTALLATION, AS 350/355 HIGH FWD (SS)
		X		D350-748-201	CROSSTUBE INSTALLATION, AS 350/355 HIGH AFT
			X	D350-748-203	CROSSTUBE INSTALLATION, AS 350/355 HIGH AFT (SS)
1				D350-748-141	CROSSTUBE ASSEMBLY, AS 350/355 HIGH FWD
	1			D350-748-143	CROSSTUBE ASSEMBLY, AS 350/355 HIGH FWD (SS)
		1		D350-748-241	CROSSTUBE ASSEMBLY, AS 350/355 HIGH AFT
			1	D350-748-243	CROSSTUBE ASSEMBLY, AS 350/355 HIGH AFT (SS)
*2	*2	*2	*2	D3502-1	SUPPORT
*2	*2	*2	*2	D5123-7	CLAMP CUSHION
*1		*1		AELS-1032-225	INSERT
	*1		*1	AETC-1032	INSERT
*2	*2	*2	*2	MS21920-20	CLAMP (OR MS21920-21/-22)
*1		*1		MS27039-1-10	SCREW
	*1		*1	NAS1685-3-8	SCREW (OR MS51958-63)
*1		*1		NAS1149D0363J	WASHER (OR AN960JD10)
	*1		*1	NAS1149C0363R	WASHER (OR AN960C10)
4	4	4	4	D3500-1	SADDLE
16	16	16	16	D3501-1	BUSHING
16	16	16	16	AN4-6A	BOLT
8	8	8	8	AN4-41A	BOLT
4	4	4	4	AN5-32A	BOLT
32	32	32	32	NAS1149D0463J	WASHER (OR AN960JD416)
8	8	8	8	NAS1149D0563J	WASHER (OR AN960JD516)
24	24	24	24	MS21042L4	NUT (OR MS21042-4)
4	4	4	4	MS21042L5	NUT (OR MS21042-5)

* REFERENCE ONLY. PARTS ARE INCLUDED IN D350-748-141/-143/-241/-243 ASSEMBLIES ABOVE

4.0 WEIGHT AND BALANCE

The following weight and balance information is for Dart crosstube installations only. This data should be similar to the existing installation. Differences from the parts removed are the responsibility of the installer.

DART CROSSTUBE	FWD/ AFT	WEIGHT	STA	MOMENT
D350-748-101	Fwd	35.2 lb	106.3 in	3742 lb-in
D350-748-103		(16.0 kg)	(2.70 m)	(43.2 kg-m)
D350-748-201	Aft	34.7 lb	162.4 in	5635 lb-in
D350-748-203		(15.7 kg)	(4.12 m)	(64.7 kg-m)

5.0 PARTS LIST

Qty -101	Qty -103	Qty -201	Qty -203	Part Number	Description
X				D350-748-101	CROSSTUBE INSTALLATION, AS 350/355 HIGH FWD
	X			D350-748-103	CROSSTUBE INSTALLATION, AS 350/355 HIGH FWD (SS)
		X		D350-748-201	CROSSTUBE INSTALLATION, AS 350/355 HIGH AFT
			X	D350-748-203	CROSSTUBE INSTALLATION, AS 350/355 HIGH AFT (SS)
1				D350-748-141	CROSSTUBE ASSEMBLY, AS 350/355 HIGH FWD
	1			D350-748-143	CROSSTUBE ASSEMBLY, AS 350/355 HIGH FWD (SS)
		1		D350-748-241	CROSSTUBE ASSEMBLY, AS 350/355 HIGH AFT
			1	D350-748-243	CROSSTUBE ASSEMBLY, AS 350/355 HIGH AFT (SS)
*2	*2	*2	*2	D3502-1	SUPPORT
*2	*2	*2	*2	D5123-7	CLAMP CUSHION
*1		*1		AELS-1032-225	INSERT
	*1		*1	AETC-1032	INSERT
*2	*2	*2	*2	MS21920-20	CLAMP (OR MS21920-21/-22)
*1		*1		MS27039-1-10	SCREW
	*1		*1	NAS1685-3-8	SCREW (OR MS51958-63)
*1		*1		NAS1149D0363J	WASHER (OR AN960JD10)
	*1		*1	NAS1149C0363R	WASHER (OR AN960C10)
4	4	4	4	D3500-1	SADDLE
16	16	16	16	D3501-1	BUSHING
16	16	16	16	AN4-6A	BOLT
8	8	8	8	AN4-41A	BOLT
4	4	4	4	AN5-32A	BOLT
32	32	32	32	NAS1149D0463J	WASHER (OR AN960JD416)
8	8	8	8	NAS1149D0563J	WASHER (OR AN960JD516)
24	24	24	24	MS21042L4	NUT (OR MS21042-4)
4	4	4	4	MS21042L5	NUT (OR MS21042-5)

* REFERENCE ONLY. PARTS ARE INCLUDED IN D350-748-141/-143/-241/-243 ASSEMBLIES ABOVE

Work Order ID 131182

131182

Page 1

Monday, March 30, 2015 9:10:34 AM

Item ID: D350-748-203

Accept

N900040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: SS Aft Crosstube AS350 / AS355

Start Date: 3/30/2015 Start Qty: 1.00

1

Cust Item ID:

Required Date: 3/30/2015 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: ML5

Date: 15-03-30 Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run Start *NR1*

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr

Revision Nbr

D350-748-243

A

DAS
6

100

Document Control

0.00

9-89

100

DC

DOCUMENT CONTROL

Memo

0.00

Doc.Control -USB or Paperwork

Photocopy bluefile & type labels per PPD350-748-201

CHG001

ML5 SEP 11 2013

110

BENDING MACHINE - CROSSTUBES

0.00

110

CNC Bend 2

Memo

0.00

CNC Alpha 160 Bender

Bend tube as per Dwg D350-748-243 using CNC bender program D350A and Folio FT

*****UNDER BEND .225" PER SIDE*****

****USE (4) DT9824 SHIM BLOC TO CHECK STRAIGHTNESS****